

LETTERS TO THE EDITOR

Nosocomial transmission of tuberculosis in HIV/AIDS units in London

HIV infected individuals are at risk for nosocomially acquired tuberculosis because of increased exposure to tuberculosis in facilities where those with AIDS associated illnesses gather, susceptibility to infection and reinfection, and rapid progression to disease once infection is established.¹⁻³ Restriction fragment length polymorphism (RFLP) analysis of *Mycobacterium tuberculosis* isolates allows detection of clusters which may be epidemiologically associated.⁴⁻⁶ Among 79 patients in large clusters in New York City, 25 (32%) were shown to be epidemiologically linked, and 19 (76%) of these identified linkages were hospital associated.⁷

Since 1985, the HIV/AIDS inpatient unit at University College London Hospitals has seen a median number of 94 new patients with AIDS annually. A total of 73 culture confirmed cases of tuberculosis were diagnosed among this population of patients, for a median number annually (with new or prior AIDS diagnoses) since 1990 of 10 (fig). Three clusters of tuberculosis have been identified. In 1992, two patients developed tuberculosis after hospitalisation at the same time as a patient with pulmonary tuberculosis diagnosed at bronchoscopy.⁸ In 1994, two patients were shown to have similar RFLP patterns and to have shared time on the same ward. In 1996, RFLP analysis was performed on isolates from five patients with tuberculosis who had been hospitalised for overlapping periods; two who had also shared outpatient attendances for nebulised pentamidine treatment had similar RFLP patterns. One of these last two had been working abroad until he shared time with the other in our treatment facilities, making exposure from an unrelated common source less likely.

In total, at least seven (17%) of the 41

cases of tuberculosis on this unit since 1992 (when selected cases were first subjected to RFLP analysis) have been part of nosocomial clusters; in the individual years they were detected, such clusters accounted for 17-40% of patients with tuberculosis. In addition to the episodes of nosocomial transmission described above, well publicised outbreaks of multidrug resistant tuberculosis have occurred in two other hospitals with HIV/AIDS units in London since 1995, one of which has been presented.⁹

Tuberculosis, including multidrug resistant disease, is more prevalent among patients with HIV/AIDS in southern Europe,^{10,11} some of whom attend for treatment in London. A recent survey of the spectrum of AIDS defining conditions in AIDS patients in London showed that 27% of African patients (who make up 10% of all AIDS cases) and 5% of non-Africans had tuberculosis as their presenting condition.¹² Since RFLP analysis is not performed routinely on all cases of tuberculosis, the diagnosis is sometimes missed, and patients frequently transfer their care between different hospitals, it is unlikely that the five nosocomial clusters documented to date are unique, and the true proportion of cases of tuberculosis in HIV infected people in London attributable to hospital associated transmission is probably greater than recognised.

The Centers for Disease Control and Prevention have published guidelines for the prevention of transmission of tuberculosis in healthcare facilities.¹³ Measures recommended aim to identify, isolate, and treat patients with tuberculosis without delay. Emphasis is placed on development of a tuberculosis infection control programme based on a risk assessment of the facility; appropriate administrative, engineering, and personal protective measures; training of healthcare workers; and evaluation of the programme's effectiveness. Issues that merit attention in London include provision of negative pressure isolation rooms, availability of rapid microbiological techniques for diagnosis and drug susceptibility testing, and greater use of directly observed therapy.

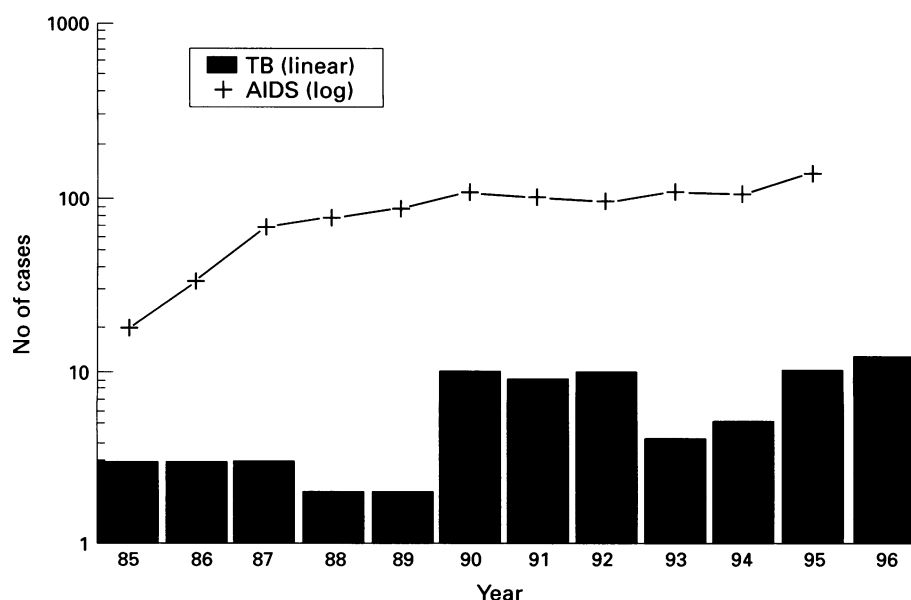
Because of the mobility of patients between hospitals, routine, timely RFLP

analysis of all new isolates of *Mycobacterium tuberculosis* from HIV infected people should be evaluated to supplement routine contact tracing. In addition, HIV testing should be offered to all new patients with tuberculosis.

Nosocomial transmission of tuberculosis may have serious medical consequences for those affected, and adverse public health effects from further spread of tuberculosis, including with possible drug resistant strains. In addition, there may be legal consequences for healthcare providers who might be considered at fault if preventive measures are not taken to correct deficiencies in infection control according to international guidelines.¹³

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Incidence of tuberculosis and AIDS. University College London Hospitals 1985-96.

- Di Perri G, Cruciani M, Danzi MC, Luzzati R, De Checchi G, Malena M, et al. Nosocomial epidemic of active tuberculosis among HIV-infected patients. *Lancet* 1989;2:1502-4.
- Daley CL, Small PM, Schecter GF, Schoolnik GK, McAdam RA, Jacobs WR, Jr, et al. An outbreak of tuberculosis with accelerated progression among persons infected with the human immunodeficiency virus: an analysis using restriction-fragment-length polymorphisms. *N Engl J Med* 1992;326:231-5.
- Small PM, Shafer RW, Hopewell PC, Singh SP, Murphy MJ, Desmond E, et al. Exogenous reinfection with multidrug-resistant *Mycobacterium tuberculosis* in patients with advanced HIV infection. *N Engl J Med* 1993;328:1137-44.
- van Embden JDA, Cave MD, Crawford JT, Dale JW, Eisenach KD, Gicquel B, et al. Strain identification of *Mycobacterium tuberculosis* by DNA fingerprinting: recommendations for a standardized methodology. *J Clin Microbiol* 1993;31:406-9.
- Alland D, Kalkut GE, Moss AR, McAdam RA, Hahn JA, Bosworth W, et al. Transmission of tuberculosis in New York City. *N Engl J Med* 1994;330:1710-6.
- Small PM, Hopewell PC, Singh SP, Paz A, Parsonnet J, Ruston DC, et al. The epidemiology of tuberculosis in San Francisco. *N Engl J Med* 1994;330:1703-9.
- Frieden TR, Woodley CL, Crawford JT, Lew D, Dooley SM. The molecular epidemiology of tuberculosis in New York City: the importance of nosocomial transmission and laboratory error. *Tub Lung Dis* 1996;77:407-13.
- Kent RJ, Uttley AHC, Stoker NG, Miller R, Pozniak AL. Transmission of tuberculosis in British Centre for patients infected with HIV. *BMJ* 1994;309:639-40.
- Easterbrook P, Bell A, Hannan M, Hayward A, Troop M, Shave A, et al. Nosocomial outbreak of multidrug resistant tuberculosis in a London HIV unit: outbreak investigation and clinical follow-up. XI International Conference on AIDS. Vancouver, July 1996. Abstract WeB305.
- Lundgren JD, Pedersen C, Clumeck N, Gatell JM, Johnson AM, Ledergerber B, et al. Survival differences in European patients with AIDS, 1979-89. *BMJ* 1994;308:1068-73.
- CDC. Multidrug-resistant tuberculosis outbreak on an HIV ward, Madrid, Spain, 1991-1995. *MMWR* 1996;45:330-3.
- Del Amo J, Petrukevitch A, Phillips AN, Johnson AM, Stephenson JM, Desmond N, et al. Spectrum of disease in Africans with AIDS in London. *AIDS* 1996;10:1563-9.
- CDC. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health care facilities, 1994. *MMWR* 1994;43 (no RR-13):1-132.

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